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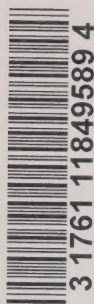
Government
Publications

M-TRAC

for rail safety

FINAL ARGUMENT

terminating the



PUBLIC HEARING

into the EXPLOSION AND FIRE

in the CANADIAN PACIFIC RAIL YARD

at WINNIPEG, MANITOBA, on DECEMBER 13, 1983

before the

RAILWAY TRANSPORT COMMITTEE

of the CANADIAN TRANSPORT COMMISSION

concerning

DANGERS TO THE PUBLIC

IN THE TRANSPORT OF EMPTY CHEMICAL TANK CARS

may 1983

AXF4283

M-TRAC

for rail safety

METRO TORONTO RESIDENTS' ACTION COMMITTEE

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F I N A L A R G U M E N T

before

The Railway Transport Committee

In the matter of a Public Hearing arising from the disintegration of an "EMPTY" propane tank care in the Winnipeg CP Yard on December 13, 1982.

Submitted by Harold Morrison, M-TRAC Chairman

Mr. Chairman,

This strange accident in Winnipeg involving a collision, rupture, explosion and fire must cause concern to the public in two specific areas.

One major concern is the evident deficiencies, lack of training and lack of supervision among the Canadian Pacific employees and management who were involved in this accident.

The other is the evident shortcomings and weaknesses in the tank car itself, and the manner of labelling it, resulting in injuries and serious damage.

Our disclosure through photographic evidence of the ruptured propane tank car and the discovery of large shell fragments over such a wide area, as disclosed in this Hearing, raises anxiety for the public in general--even those who in this case could have been a quarter-mile from the accident site and still have been threatened.




Other parties in this Hearing have given the Panel their views and evidence on the employee deficiencies--the use of untrained workers in the handling of locomotives which caused a runaway situation and the collision with these dangerous so-called EMPTY propane cars. There is no doubt the very serious employee and supervision problem in the Winnipeg diesel yard can be improved, at least in the field of human resources, by Orders designating the manner in which workers must be trained before they are allowed to perform functions in the handling of massive diesel power in a congested area.

RTC INVOLVED

But when we speak of human error and failure, we must also be disturbed by the role of the Railway Transport Committee of the Canadian Transport Commission and its responsibilities to the public in the field of safety. We find in this case that the RTC's chief safety officer in this region visited the yard frequently and in effect found nothing wrong--or at least nothing requiring protest. This is some 15 months after the Show Cause Hearing and the Show Cause Decision in which the RTC gave the public renewed assurances that vigilance over the railways would be increased.

As the Mayor of this City of Winnipeg has stated, the RTC must share an element of responsibility in this accident. It may not be too harsh a criticism to state that there are deficiencies within the RTC and that as a result, the public is simply not getting the protection it requires and is directed by Parliament under the law.



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In Canada, the volume of traffic in these dangerous chemicals is increasing. Their transport through highly-congested populations also is increasing. In many United States cities action has been taken on the municipal level to restrict the movement of these chemical trains because of the catastrophic danger they pose. Here in Canada we must look to the Railway Transport Committee to provide the necessary measures to protect the public. As one American authority noted, the habitual practice of bureaucracy is to wait for tragedy to occur before installing the necessary safety measures. If the criteria for deterrence is to say: How many people have died, then we say that is simply not good enough. It is a cruel measure of our indifference if we have to count the dead before we act.

IMPOSED DEMANDS

If there are deficiencies in worker training and supervision in railway yards and railway operations, the RTC should be able to make demands on the railways that these shortcomings be overcome. And if the railways are lax in making improvements, the RTC should demonstrate ability to exercise legal enforcement.

We not only worry about union and management deficiencies and inadequate training, we have reports of American concern over the increasing use of alcohol and drugs among American rail workers. It appears likely that alcoholism may have been a key cause in that very dreadful accident in Livingston, Louisiana, just 6 months ago. We pray that nothing similar happens in our own country.

We understand--and this is something the RTC must investigate--that drugs along with alcoholism are becoming a matter of increasing concern for human management. The diesel power units in use today convey tremendous strength. The length of trains they pull is increasing. The load of dangerous chemicals also is increasing. In the United States some railroads have taken action of their own to limit the length and speed of trains carrying dangerous products. Here in Canada the RTC has taken action to limit the speed of trains carrying dangerous products in congested areas. But somehow the RTC has avoided action to cover the dangers of the EMPTY. We have heard the argument that the issue of the EMPTIES was brought up by us at the Show Cause Hearing in 1981 and that the RTC rejected our views.

This is simply not true. We did not bring up the issue of the EMPTIES in the Show Cause Hearing because in our ignorance we did not know the serious threat they posed. But after the February 1982 derailment near Orilla, Ont. the scientific community raised their voices of concern and urged us to investigate the matter. We did and were alarmed to learn that these so-called EMPTIES can be as dangerous and even more dangerous than loaded cars.

EMINENT AUTHORITY

It is not only our own witness, Professor D.H. Napier, telling you this; or even the word of the Deputy Fire Chief who was in control of operations during the December 13 explosion and fire in the Winnipeg CP Yard. It is almost the entire emergency response structure in North America telling you this.

More than a year ago we began pleading with the RTC to redesignate the chemical EMPTIES as loaded cars for safety purposes. More than once we received the response from the RTC that our anxieties are exaggerated; that the dangers from these chemical EMPTIES are not as serious as we make them out to be.

Right up until six weeks before this Winnipeg accident we received letters from the RTC stating that we are wrong--that these EMPTIES cannot be as dangerous to the public as loaded cars.



Winnipeg CPR Yard, Dec. 13, 1982 (W. Glowacki, Winnipeg Free Press)

Cover Photo: Winnipeg CPR Yard, Dec. 13, 1982 (W. Glowacki, WFP)

What shocks us is that the RTC may have known in that period that the International Association of Fire Chiefs roundly condemned the labelling of these EMPTIES as misleading and dangerous and that this very responsible body of fire chiefs fully endorse the view that these EMPTIES can be as dangerous and even more dangerous than loaded cars.

WASHINGTON CONCERNED

And it is not only the fire chiefs who are concerned about this misleading identification. We understand that the National Transportation Safety Board in Washington is trying to redefine the EMPTIES in terms of weight and volume in order to meet the outcry from the fire chiefs. We hope the Safety Board will succeed, although we have no confidence that the U.S. Government is able to reach quick solutions. There is simply too much political involvement. If we are to reach reasonable solutions, we must find them among ourselves.

The simplest thing to remember is that the word EMPTY on these chemical tank cars originated not as a safety identification but as a tariff term. In some cases it means that a certain category of tank cars can move on the railway system without a tariff when they are classified as EMPTY.

We are told shippers favour the idea of leaving a portion of the original load at the bottom of the tank with vapour filling the remainder of the tank for the purpose of deterring the entry of contaminants, like air, which could cause an explosive mixture.

LIVE BOMBS

Churning through the cities at speeds of 40, 50 and 60 miles per hour are loads of these EMPTIES which are the near equivalent of live bombs. The explosive power of some of these EMPTIES is much greater than loaded cars. And when we see propane EMPTIES hooked to chlorine EMPTIES and moving at these high speeds through congested populations, especially those which cannot be evacuated in the event of a chemical spill, then we begin to wonder whether we have come any distance since the Mississauga derailment of 1979.

So we are concerned, Mr. Chairman, and we came here with the hope that some action will emerge on the basis of a commitment by the Chairman of the Railway Transport Committee that there would be a thorough examination of these EMPTIES, possibly leading to implementing Orders.

We have given you the benefit of the wisdom of Professor Napier, a leading authority in the field of chemical explosives, who, fortunately for us, came from Britain and accepted a post with the University of Toronto.

We note the conflict in views between Professor Napier and your own witness, Mr. E.L. Kunz, of St. Charles, Missouri, on the technical nature of tank car explosions. Mr. Kunz, a mechanical engineer, acknowledges that he is not a chemical explosives expert.

VALUE TO RTC

We believe that Mr. Kunz has made a valuable contribution to this Hearing. He has given you the view that speed can be a major contributing factor as a cause of accidents. He has shown us that these EMPTIES cannot be easily purged and that attempts to condition them toward a degree of safety can be both costly and impractical. We do not demand conditioning. We simply say that until there is a reasonable method of making them safe, let us simply treat them as loaded cars, especially in transporting them through highly congested populations.

You will note that the Propane Gas Association of Canada is deeply concerned about the costs in trying to condition the EMPTIES but seeks to "encourage any reasonable changes intending to improve safety." We agree. Simply slowing down the EMPTIES in congested areas and forcing them to comply with gateway and other inspections should relieve some of the anxieties of the public. This is not a heavy cost or a heavy burden for the railways. And we have stated before that if safety measures place an unbearable cost on the railways, then Parliament must step in to provide a contribution.

We now have a situation where the railways will benefit from the Crow's Nest tariff changes. One investment company estimates that in the case of Canadian Pacific Limited, the benefits may amount to as much as \$4.00 per share. Surely some of these benefits can spill over in the field of safety. It is not too much to ask for the injection of deterrents which in themselves hold benefits for the railways.

Now let us look at the evidence of Mr. Kunz. He has been associated with American railroads for many years and probably sees the situation from a position of the industry rather than the public. For example, it is from that view that he may have represented his evidence on the Livingston, La. accident which he depicted as one under very much control by emergency response officials and yet was one of the most dreadful accidents in recent years.

RUPTURES REMAIN

His position reminds us very much of the reassurance we received two years ago from Doctor Harris, the Vice-President of the Association of American Railroads, who spoke glowingly of improvements in tank car design and construction and proclaimed that the days of violent ruptures were over.

No, they are not over. Far from it. In that Livingston derailment just six months ago, we had a fireball, running fires, heavy smoke and poisonous fumes, and two BLEVEs--boiling liquid expanding vapour explosions.

Livingston suffered \$10 million dollars in damages; 43 tank cars derailed; forced evacuation of population over an area of five miles on either side of the track; a contaminated soil situation so serious that no less than 35,000 cubic yards of this poisonous earth had to be scraped away before the people could be allowed back in.

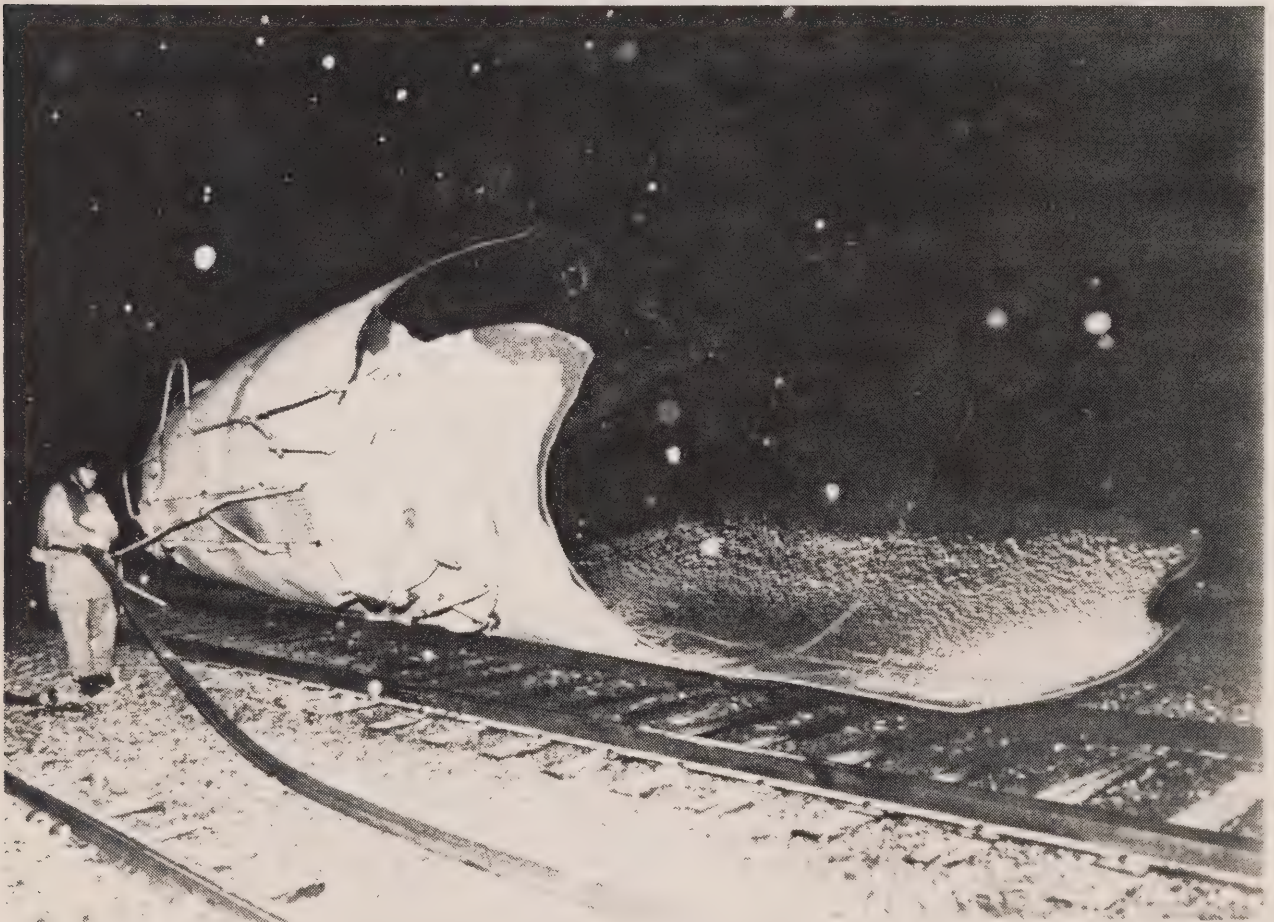
In Mississauga, the people had to be evacuated for six days; in Livingston, they had to stay away for two weeks. Fortunately in both cases the people could be taken out of the area in time. But what if that kind of Livingston derailment had occurred in a congested downtown city area, such as Winnipeg, Toronto, Montreal or Vancouver? It might have been a different story and one not so pleasant to retell.

So we hesitate when Mr. Kunz speaks of the fine way in which shelf couplers worked in the Livingston derailment. On Page 686 of the Transcript he says: "This accident occurred somewhere around 35 miles an hour and involved 28 tank cars and there was no evidence that the tank shelf couplers were disengaged. They all remained coupled together."

That's sounds impressive. And there is no doubt that there has been improvement in these tank cars. But from a public viewpoint we ought to look at the report of the National Transportation Safety Board and see what that Board says about the couplers which "remained coupled together."

Car No. 29: Shelf coupler at B end bent upward; coupler at A end missing. Car No. 30: Both shelf couplers torn from coupler pockets. Car No. 31: Shelf couplers and draft gears torn from both coupler pockets. Car No. 34: Shelf coupler at A end torn from coupler pocket. Car No. 42: Draft gear and coupler at A end twisted out of the coupler pocket. Car No. 44: Coupler at B end torn from coupler pocket. Car No. 48: Type E top and bottom shelf couplers missing at both ends of car.

Car No. 49: Type E top and bottom shelf coupler at B end twisted upward; A end coupler coupled to a broken coupler from adjoining car. Car No. 50: Type E top and bottom shelf coupler missing from B end of car. Car No. 51: Type E top and bottom shelf coupler at B end missing; coupler at A end broken off. Car No. 52: Bottom of E type top and bottom shelf coupler at A end broken. Car No. 53: B end coupler broken off. Car No. 54: Bottom shelf of the A end coupler broken off. Car No. 56: Both couplers twisted off during derailment.



Ruptured EMPTY Tank Car, Winnipeg CPR Yard
Dec. 13, 1982 (W. Glowacki, WFP)

Mr. Kunz also suggested the Livingston emergency response people had the situation well under control. Again we must look at the facts. Mr. Kunz told you how well the tank cars withstood the fire environment and spoke of only one J-type jacketed tank car rupturing and that took 84 hours. He suggested that part of the jacket was torn away before the rupture "so the emergency personnel were well aware of what the situation was."

Well aware? Amid a fireball, ruptures, heavy black smoke and toxic fumes, the placarding on the tank cars became virtually invisible. Aircraft had to be brought in to take photographs which were then analyzed to help identify location of specific products. One 105A car containing anti-knock compound Poison B ruptured and exploded on the third day rocketing across Highway 190. The tank shell shot northward about 150 feet into a wooded area.

ANOTHER RUPTURE

Another 105A containing vinyl chloride, a flammable gas, exploded on the fourth day with the tank head propelled southward over Highway 190 while the remaining portion of the car shot northward a distance of 600 feet.

It is true that some cars burned for days until they were detonated by planned charges but that does not tell the whole story. The full story of Livingston may not be told until future generations are able to assess the genetic impact of that soil contamination. Soil may have been scraped away but how much of those lethal chemicals seeped down into crevices and other subsoil areas not easily reached by the sweep-up.

The Livingston derailment demonstrated that those terrible BLEVEs, which Wilber Walls of the National Fire Protection Association first warned us about, are still with us. And you cannot dismiss the possibility that the Winnipeg explosion was, in fact, a BLEVE. We discussed the matter with Mr. Walls and gave him all the facts, as RTC counsel Keith Thompson gave all the facts to Mr. Kunz, and Mr. Walls concluded that Winnipeg was a BLEVE--an IMPACT BLEVE, as he called it.

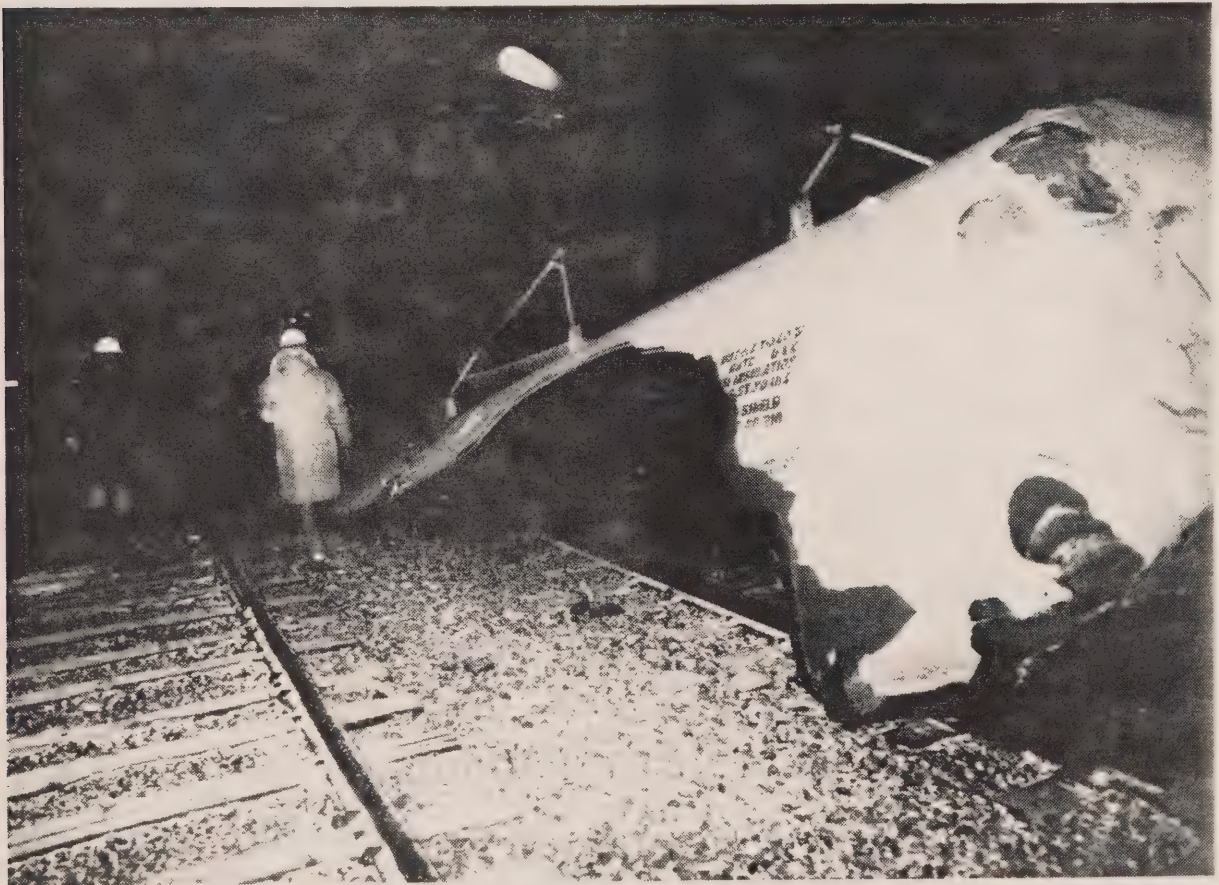
Again, we are not criticizing Mr. Kunz for his ready acceptance of the theories on the Winnipeg explosion advanced by Mr. Thompson. We believe in all honesty that Mr. Kunz provided his response simply from a view of the railroad industry.

Another point about Livingston: The accident occurred at a speed of 35 miles per hour--the very speed designated by the Railway Transport Committee as a safe speed for the carriage of these lethal and toxic chemicals through the most heavily-populated areas of Canada. We pleaded for a speed reduction to 25 miles per hour, in line with the recommendations of Mr. Justice Samuel Grange of the Ontario Supreme Court following his year-long investigation of the Mississauga derailment.

The RTC denied our request and settled for 35 miles per hour, suggesting that engine men would reduce their speed in fact to 30 miles per hour to maintain the average 35 mile per hour speed limit. We have no confirmation that engine men are following such practices.

The argument advanced by the RTC in opposition to the 25 miles-an-hour limit is that it is within the harmonic roll range and that harmonic roll is a cause of derailments. We do not accept that argument. To a large extent the railroads have overcome harmonic roll and certainly we see them travelling--when they so wish--at 20 and 25 miles an hour without fear of falling off the track.

The Livingston derailment was 35 miles an hour and the Winnipeg accident was about 35 miles an hour. Let that point remain fixed in our minds.



Ruptured EMPTY Tank Car, Winnipeg CPR Yard
Dec. 13, 1982 (W. Glowacki, WFP)

WINNIPEG MYSTERY

Now we come to the "theories" of what happened in the Winnipeg yard on December 13, 1982. There is still a great deal of mystery attached to this accident and some unwarranted confusion. We find the Interim and Final Reports of the RTC investigators unacceptable. Their reports were suspect from the very beginning. We tried to cross-examine them on the witness stand and found this course of action unproductive. We were forced in the end to launch our own investigation and came up with clues which the investigators should have had at their fingertips. RTC counsel postulated the theory of an unconfined explosion. And Mr. Kunz agreed. But why was it necessary to postulate theories when the photographic evidence was there--from the very beginning? Company drawings submitted as evidence turned out to be deceptive. It took a newspaper photographer to give us the photographic clues of what took place: A collision and a ruptured tank, with the two portions of the tank split in a conventional BLEVE fashion and large fragments of the tank found as far as 1,175 feet from the accident site.

We look at the Interim Report and it speaks of explosion and fire. In the Final Report there is a change: The term becomes collision and fire, as though the explosion had somehow shrunk in significance. The Interim Report speaks of "rupture" but on the witness stand, Mr. Karaskewich, one of the investigators, repudiated the term "rupture" as applied to the EMPTY propane tank car and stated further that he did not write that term, although he signed the report.

This evolution in descriptions was accompanied by lack of detail on the accident itself. Although RTC counsel argued during the early phase of this Hearing that the propane tank car did not move an inch, it is clear that the broken tank car moved more than an inch, moved possibly 60 feet, possibly as a direct result of the explosion. The investigators' reports did not even bother to tell us the exact point of impact. So we were left with conjecture and theories and the arguments of Mr. Kunz and Professor Napier on the question of whether confined explosion can take place in chemical tank cars, especially those classified as EMPTY. But isn't a confined explosion a part of the BLEVE family? And what does it really matter to the public whether it was one type of explosion or another--it is the threat to their lives and their loved ones that is important. It is the damage that can be caused by these EMPTIES that is of prime concern.

What is important, Mr. Chairman, is that we are not hiding essential facts from the public; that we are not masquerading accidents for the purpose of spreading complacency and reducing anxiety. The word EMPTY on a chemical tank car is a misnomer. There is no easy way of purging them. They remain partially loaded, perhaps 2% of the original content, perhaps more.

The mystery is that we don't really know what's inside these tank cars. We don't know the real weight or the real volume of the liquid that remains inside. The National Transportation Safety Board in Washington is grappling with the idea of trying to enforce on the shippers means of specifying the weight and volume of content in an EMPTY. But how is this to be done accurately? And is the cost of doing so worth the effort? Isn't it far more simple to treat these EMPTIES as loaded cars for safety purposes in congested areas?

You will ask is such a move a real deterrent to accidents. We say that every bit of precaution placed in the system adds to the overall safety potential. The costs are minimal; the benefits can be satisfying.



Winnipeg CPR Yard, Dec. 14, 1982 (J. Haggarty, WFP)

YARD PROBLEMS

As you, Mr. Chairman, rightly pointed out during the Winnipeg Hearing, that the CP diesel shop showed up in glaring fashion the problems, the weaknesses, the deficiencies that abound in this small segment of a vast industry. Just let the diesel shop problems of Winnipeg repeat themselves across the country and you have the makings of sheer chaos. This chaos spells danger, not only for the employees in the yards but for employees on the roads and for the thousands of civilians who live and work near the track.

We have concentrated a great deal of attention on the EMPTY propane cars. But many other chemical problems arise through the system. You will recall the case of the punctured tank car, a so-called EMPTY tank car in the Surf, Calif. derailment of May 1981 when hydrogen fluoride escaped from the breached EMPTY tank car and formed a poisonous gas cloud that caused injuries despite the fact that it was neutralized by a spilled plaster compound.

The National Transportation Safety Board noted in that Surf accident report that because of the tariff classification, "tank cars containing up to one-third carload of hazardous materials may be moving in transportation without adequate identification of the contents on the car or on the accompanying railroad documentation."

The Board also stated: "Despite the stencilling of the product name on the car and the 'EMPTY' placards, the carrier and others had no way of assessing the danger posed by the 'EMPTY' car in the accident without knowledge of the amount of product left in the car."

Defining the exact amount of residue in the EMPTY may help firefighters but it does not reduce the initial risk to the public to explosions and poisonous fumes. So that brings us again to Mr. Kunz's evidence in which he deduces that the costs of conditioning the EMPTIES are impractical.

You would then think he would discuss the logical step of treating them as loaded cars. And he does so but simply in a very negative approach. Instead of discussing the advantages and disadvantages, he simply jumps to the conclusion that redefining them as loaded cars would cause congestion in the marshalling yards. He appears to have an instinctive way of flying to the defense of the railroads without even considering the public at all.

It reminds us very much of that ominous propaganda spread just before the opening of the Show Cause Hearing in 1981 in which the rail and other industries spoke of bankruptcies, tremendous increases in consumer prices, breadlines and empty factories because selected speed reductions would delay deliveries of essential products to their destinations and cause congestion and chaos on the lines.

But somehow none of that happened. We have survived the Show Cause Decision and railway share prices are healthier than ever. We're not taking the credit for those share increases but we can argue that safety is a real factor in company profits, whether on the track or elsewhere. Large-scale derailments don't help the Canadian railroad companies. They don't enhance efficiency and they don't enhance profits. Good management encourages reasonable deterrents against costly accidents.

And who wants to be responsible for hurting children crossing a railroad ramp on their way to school or while sitting in their classrooms near the track? Why is it always so difficult to persuade the authorities that when it comes to considering margins of deterrence we ought to be more generous on the side of safety. The cost of our proposals is infinitesimally small compared to the security they bring. We cannot avoid accidents but we can reduce their numbers and their toll in human life and property.



Ruptured EMPTY Tank Car and other debris, Winnipeg CPR Yard
Dec. 13, 1982 (J. Haggerty, WFP)

